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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Richard A. Nichols

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FOGG & POWERS LLC

5810 W 78TH STREET

SUITE 100

MINNEAPOLIS, MN 55439

EXAMINER

WONG, LINDA

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

11/28/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/087,610	Applicant(s) NICHOLS, RICHARD A.	
	Examiner LINDA WONG	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7-10,12,13,15-17,19-22,24-26,28 and 30-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-10,12,13,15-17,19-22,24-26,28 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Applicant's arguments filed 7/13/2008 have been fully considered but they are not persuasive.
 - a. The applicant contends the prior art fails to disclose a "status message" within the limitation "the processor places the phase locked loop in the holdover condition when a quality level of the reference clock signal indicated by the status message is less than an expected quality level of the phase locked loop in the holdover condition". Col. 5, lines 20-32 discloses "The output of the phase comparator 11 is coupled to VCO 29 through switch 30. A monitor 26 monitors the input reference frequency 10. If the input reference frequency is accurate to within the desired range (approximately plus or minus 15 ppm) then the VCO 29 is phase locked to the reference output 10 so that the output 28 is in phase with the input reference. A monitor constantly tests both the presence and the accuracy of the input reference frequency 10. If the input signal is lost or becomes invalid, the monitor 26 outputs a control signal on line 31 to couple switch to the internal frequency reference of the clock holdover circuit of the present invention." The paragraph above indicates the processor or monitor uses a range of accuracy to check the quality level of the reference signal. In order to perform such a task, in implementation, the range of accuracy would be provided in the form of a threshold or status message or an indication so to be used to compare with the input reference frequency as indicated by the paragraph above. The paragraph states "If the input reference frequency is

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accurate to within the desired range" then "the VCO 39 is phase locked to the reference output 10 so that the output 28 is in phase with the input reference."

By checking the quality level or the accuracy of the input reference frequency, phase locked or holdover condition of the phase locked loop is determined.

The paragraph also indicates "If the input signal is lost or becomes invalid, the monitor 26 outputs a control signal on line 31 to couple switch to the internal frequency reference of the clock holdover circuit of the present invention." This indicates the validity or accuracy of the input reference frequency determined the clock holdover condition of the phase locked loop.

- b. Based on the rebuttal above, the rejection stands as stated in the previous office action. A copy is provided below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 2. **Claims 1,4,5,7,8,9,26,28,33,34**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US Patent No.: 4849993) in view of McCullagh et al (US Publication No.: 20020022465).

- a. **Claims 1,4,5,9**,

- i. Johnson et al discloses

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- “a phase comparator having a first input for receiving a reference clock signal, a second input for receiving a feedback signal, and an output for providing an error signal” (Fig. 2, label 11)
 - “a device having an input for receiving the error signal and an output for providing a control signal” (Fig. 2, label 50)
 - “an oscillator having all input for receiving the control signal and an output for providing a timing signal, wherein the feedback signal is derived from the timing signal” (Fig. 2, label 29)
 - “a processor coupled to the oscillator, wherein the processor is further coupled to receive a status message indicative of a quality level of the reference clock signal” (Fig. 2, label 26, Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.) and
 - “the processor places the phase locked loop in the holdover condition when a quality level of the reference clock signal indicated by the status message is less than an expected quality level of the phase locked loop in the holdover condition” (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.)
- ii. Johnson et al fails to disclose a loop filter.

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- iii. McCullagh et al discloses a loop filter used within the PLL. (Fig. 4, label 410) It would have been obvious to one skilled in the art to incorporate a loop filter in the PLL as disclosed by McCullagh et al into Johnson et al's invention so to control the VCO to determine the output of the VCO, which allows for more efficient synchronization of the input signals.
 - iv. Johnson et al fails to disclose a loop filter and machine readable memory.
 - v. McCullagh et al discloses a memory coupled to the processor (paragraph 131), wherein the memory has instructions stored, wherein the instructions stored on the memory are capable of causing the processor (paragraph 131) Although McCullagh et al does not explicitly state a machine- readable medium for placing the PLL in holdover condition, a instruction stored in a machine-readable medium to control processor is a well known. Since Johnson et al discloses a processor for monitoring holdover conditions and placing the PLL in holdover, it would have been obvious to one skilled in the art to incorporate a machine readable medium for storing instructions based on designer's choice and to control the system to perform the required instructions or tasks so to provide better and more efficient synchronization of the input signals.
- b. **Claim 2,**
- i. Johnson et al discloses "the processor to selectively place the phase locked loop in the holdover condition in response to the status message regardless of a validity of the reference clock signal". (Col. 6, lines 20-40 discloses the

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monitor component checks for accuracy of the signal prior to selecting 10a or 10b. Col. 5, lines 20-32 indicates if the system is not within the desired range, the system will go into holdover.)

- ii. Johnson et al fails to disclose “the instructions stored on the machine-readable medium are capable of causing the processor” to place the PLL in holdover. McCullagh et al discloses software is stored in memory.
(paragraph 131) It is well known in the art that software can be used to control the PLL. Since Johnson et al discloses a processor for monitoring holdover conditions and placing the PLL in holdover, it would have been obvious to one skilled in the art to incorporate a machine readable medium for storing instructions based on designer’s choice and to control the system to perform the required instructions or tasks so to provide better and more efficient synchronization of the input signals.
- c. **Claim 7**, Johnson et al discloses “the expected quality level is at least a Stratum 2 level”. (Col. 4, lines 36-43 indicates the Stratum level and the range in which the Stratum level would indicate the input signal.)
- d. **Claim 8**, Johnson et al discloses “the instructions stored on the machine-readable medium are capable of causing the processor to monitor the status message and to place the phase locked loop in the holdover condition if the quality level indicated by the status message is below the target quality level when the reference clock signal is valid”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the

range. If not, whether falling below or above the range, the PLL will be placed in holdover.)

e. **Claims 26,28,33,34,**

i. Johnson et al discloses

- “during a time when a primary reference clock signal is valid and has an indicated quality level at or above a target level” (Col. 6, lines 12-35 discloses selecting a reference signal. The monitor would determine the accuracy of reference 10a and 10b.)
- “generating a first error signal indicative of a phase relationship between the primary reference clock signal and a first feedback signal” (Fig. 2, label 11)
- “generating the timing signal in response to the first control signal” (Fig. 2, label 29) and
- “deriving the first feedback signal from the timing signal” (Fig. 2, label 28)
- “during a time when the primary reference clock signal is failed or has an indicated quality level below the target level, and when a secondary reference clock signal is valid and has an indicated quality level at or above the target level” (Col. 6, lines 12-35 discloses selecting a reference signal. The monitor would determine the accuracy of reference 10a and 10b.)

- “generating a second error signal indicative of a phase relationship between the secondary reference clock signal and a second feedback signal” (Fig. 2, label 11)
 - “generating the timing signal in response to the second control signal” (Fig. 2, label 28) and
 - “deriving the second feedback signal from the timing signal” (Fig. 2, label 28) and
 - “during a time when each reference clock signal is failed or has an indicated quality level below the target level” (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.)
 - “generating a holdover control signal” (Col. 5, lines 20-32 discusses the holdover conditions and placing the PLL in holdover. To do so, a signal must be generated in order to place the PLL in holdover and indicate to other components the PLL is in holdover.) and
 - “generating a timing signal in response to the holdover control signal” (Fig. 2, label 28)
 - “wherein the method is performed in the order presented”. (Fig. 2 shows the process and Col. 5 and 6 discusses the procedure.)
- ii. Johnson et al fails to disclose a filter within the process.

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- iii. McCullagh et al discloses a loop filter used within the PLL. (Fig. 4, label 410) It would have been obvious to one skilled in the art to incorporate a loop filter in the PLL as disclosed by McCullagh et al into Johnson et al's invention so to control the VCO to determine the output of the VCO, which allows for more efficient synchronization of the input signals.
3. **Claims 10,12,13,15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US Patent No.: 4849993) in view of McCullagh et al (US Publication No.: 20020022465), further in view of Ham, III (US Publication No.: 20020080901)
- a. **Claim 10** inherits all the limitations of claim 1, but claim 1 does not recite a receiver, a framer and a prescaler. Ham, III discloses a cascaded parallel phase locked loop comprising a receiver (Fig. 1), a framer for locating a frame pulse and generating a reference clock signal from the recovered clock signal and data signals (Fig. 4, label 60, paragraph 37) and a prescaler coupled between the framer and PLL. (Fig. 4, labels 60,62 and Fig. 5, labels 64,66) It would be obvious to one skilled in the art to incorporate a framer as disclosed by Ham, III into Johnson et al's invention to provide a reference clock signal to the PLL, wherein the reference clock signal is geared towards the information received by the receiver, thus the PLL is synchronizing the clock signal pertaining to the information that needed within the system. It would have been obvious to one skilled in the art at the time of the invention to incorporate the use of a prescaler

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as disclosed by Ham, III into Johnson et al's invention so to reduce the input clock so to allow the PLL so synchronize the input clock more accurately.

b. **Claim 12** recites similar claims as claims 1 and 10. Such claims are rejected as stated in claims 1 and 10.

c. **Claim 13,**

- i. Johnson et al discloses “the processor to monitor the status message and to place the phase locked loop in the holdover condition if the quality level indicated by the status message is below the target quality level when the reference clock signal is valid”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover. The column also discloses the monitor checks for validity of the signal.)
- ii. Johnson et al fails to discloses “the instructions stored on the machine-readable medium are capable of causing the processor” to place the PLL in holdover. McCullagh et al discloses software is stored in memory. (paragraph 131) It is well known in the art that software can be used to control the PLL. Since Johnson et al discloses a processor for monitoring holdover conditions and placing the PLL in holdover, it would have been obvious to one skilled in the art to incorporate a machine readable medium for storing instructions based on designer's choice and to control the

system to perform the required instructions or tasks so to provide better and more efficient synchronization of the input signals.

- d. **Claim 15** recites similar claims as claims 1 and 10. Such claims are rejected as stated in claims 1 and 10.

4. **Claims 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US Patent No.: 4849993) in view of McCullagh et al (US Publication No.: 20020022465), further in view of Ham, III (US Publication No.: 20020080901), further in view of Baydar et al (US Publication No.: 20020097743).

- a. **Claim 16** inherits all the limitations of claim 1 and 10 but claims 1 and 10 does not teach a shelf backplane. Baydar et al discloses a shelf backplane and a plurality of shelf elements coupled to the shelf backplane comprising a synchronization of the plurality of shelf elements (Fig. 6, labels 26 and 28, Fig. 7, labels 26 and 28 and Fig. 8), wherein the timing circuit provides a synchronization timing signal to a shelf-plane (Fig. 8, labels 72 and 83 and Fig. 6, labels 26 and 28) and inherently discloses the synchronization timing signal is derived from the first timing signal. (Fig. 8, label 83, page 8, paragraphs [0147][0148][0149], page 9, paragraph [0161] and page 1 O, paragraph [0164]) It would be obvious to one skilled in the art to incorporate a shelf backplane into Johnson et al's invention to allow transmission and reception from other subscribers with different service formats. (page 2, paragraph [0016])

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 17,20,21,22,24,25,30,31,32** are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al (US Patent No.: 4849993).

a. **Claim 17,**

i. Johnson et al discloses

- “generating the timing signal from a reference clock signal in a phase locked loop” (Fig. 2 shows a phase locked loop, wherein the reference clock signal is label 10 and the timing signal is label 28)
- “monitoring a status message indicative of a quality level of the reference clock signal” (Fig. 2, label 26, Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.) and
- “placing the phase locked loop in a holdover condition if the quality level indicated by the status message is below a target level, wherein the method is performed in the order presented” (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the

reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.)

- “wherein the target level is an expected quality level of the phase locked loop in the holdover condition”. (Col. 5, lines 20-32, Col. 4, lines 36-43 discloses the clock holdover circuit can have a stratum 3 clock signal, wherein stratum 3 determine the range for comparison as disclosed in Col. 5.)
- b. **Claim 20**, Johnson et al discloses “the expected quality level is a Stratum 2 level”. (Col. 4, lines 36-43 indicates the Stratum level and the range in which the Stratum level would indicate the input signal.)
- c. **Claim 21**, Johnson et al discloses “placing the phase locked loop in the holdover condition if the quality level indicated by the status message is below the target level occurs when the reference clock signal is valid”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover. The column also discloses the monitor checks for validity of the signal.)
- d. **Claims 22,32**,
- i. Johnson et al discloses
 - “generating the timing signal from a reference clock signal in a phase locked loop, wherein the reference clock signal is selected from the group consisting of a primary reference clock signal and at least one

secondary reference clock signal” (Fig. 2 shows a phase locked loop, wherein the reference clock signal is label 10 and the timing signal is label 28. Col. 6, lines 12-35 discloses selecting a reference signal.)

- “monitoring status messages indicative of a quality level of the primary reference clock signal and the at least one secondary reference clock signal” (Col. 6, lines 12-35 discloses selecting a reference signal. The monitor would determine the accuracy of reference 10a and 10b.) and
- “placing the phase locked loop in a holdover condition if the quality level indicated by each status message is below a target level regardless of a validity of rely reference clock signal, wherein the method is performed in the order presented”. (Col. 6, lines 20-40 discloses the monitor component checks for accuracy of the signal prior to selecting 10a or 10b. Col. 5, lines 20-32 indicates if the system is not within the desired range, the system will go into holdover.)

- e. **Claim 24**, Johnson et al discloses “maintaining the phase locked loop in the holdover condition until at least one of the reference clock signals is valid and has a status message indicating a quality level at or above the target level”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover. The column also discloses the monitor checks for validity of the signal.)

- f. **Claim 25**, Johnson et al discloses “the phase locked loop is maintained in the holdover condition for a predetermined period after a reference clock signal having a valid status has a status message indicating a quality level at or above the target level”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover. The column also discloses the monitor checks for validity of the signal.)
- g. **Claim 30**,
- i. Johnson et al discloses
- “generating the timing signal from a reference clock signal in a phase locked loop” (Fig. 2, label 28)
 - “monitoring a status message indicative of a quality level of the reference clock signal” (Fig. 2, label 25, Col. 5, lines 20-32) and
 - “placing the phase locked loop in a holdover condition if the quality level indicated by the status message is below a target level, wherein the method is performed in the order presented”. (Col. 5, lines 20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover.)
- h. **Claim 31**, Johnson et al discloses “placing the phase locked loop in the holdover condition if the quality level indicated by the status message is below the target level occurs when the reference clock signal is valid”. (Col. 5, lines

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20-32 discloses the input frequency signal is checked to determine if the reference signal is within the range. If not, whether falling below or above the range, the PLL will be placed in holdover. The column also discloses the monitor checks for validity of the signal.)

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
7. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINDA WONG whose telephone number is (571)272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong
11/14/2008

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611